

AUG. 26. 2008 7:40AM

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NO. 1691 P. 7

AUG 26 2008

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN THE APPLICATION OF:

ROGER MOONS

CASE AD6883USNA
NO.:

APPLICATION NO.: 10/627902

GROUP ART UNIT: 1761

FILED: JULY 25, 2003

EXAMINER: DREW E. BECKER
CONFIRMATION NO.: 3469

FOR: IMPROVED THERMOPLASTIC POLYMERIC OVENWARE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION UNDER 37 C.F.R. 1.132


1. I obtained a B.S. in Chemistry from the Polytechnic Institute of Brooklyn in 1962 and a Ph.D. in Organic Chemistry from the University of California at Davis in 1967.
2. I am currently receiving a pension from the assignee of this application E.I. DuPont de Nemours & Co., Inc. (hereinafter DuPont).
3. I am a Registered Patent Agent (No. 33,852).
4. I am currently a consultant for DuPont on technical and patent matters.
5. While consulting for DuPont I directed an experiment as set forth below.
6. A composition containing 55 weight percent of Zenite® 6000 Liquid Crystalline Polymer (available from E. I. DuPont de Nemours & Co., Inc., Wilmington, DE 19998 USA), 37 weight percent talc, and 8 weight percent carbon fiber was prepared by melt mixing in a 30 mm Werner & Pfleiderer twin screw extruder. The techniques used to prepare this composition were similar to those commonly used to prepare other compositions containing LCPs.
7. The above composition was molded in a 6 oz. HPM injection molding machine into 4 inch diameter disks.

Application No.: 10/627902
Docket No.: AD6883USNA

Page 2

8. An above described disk (after machining) was tested for through plane thermal conductivity. The resulting value was 0.368 W/m²K.

9. The attached pages from Electronic Research Notebooks D100052 and D100008 describe this experiment and the conditions used for the various operations. The sample number for the above described composition was 13-1. The composition of sample 13-2 has been blanked out from the page, and the results for the thermal conductivity of this sample have been omitted.


Joel D. Citron

Date: Mar 2, 2007

T:\Patent Documents\Eng. Polymers\AD-68xx\AD6883\AD6883 Declaration of Joel Citron.doc



DuPont Electronic Laboratory Notebook

Identification Number : D100052-28.01

Experiment Name : D100052-13

Program Name : Zenite

Project Name:Thermoconductivity For Joel Citron

Document Name : D100052-13 series Thermal Conductive Zenite Joel Citron.pdf

Site Name : EEP ST

Business Unit :Engineering Polymers

Author Name : Mike J. Molitor

Date : 02/26/2007 14:59:57

Co-Author Details :

Witness Name : Adcock, Dave

Date : 02/26/2007 15:03:04

Date (GMT)	Signed By
2/26/2007 07:59:57 PM	Name: Mike J. Molitor Pre-Sig Hash: 9b9c723fedbb8ac913753be9aa4abc415c4f0fa1
Justification	By entering your password you verify that you planned and/or executed the work, directed the work, analyzed the result, or drew the conclusions described within this document.

2/26/2007 08:03:05 PM	Name: Adcock, Dave Pre-Sig Hash: 4004778257da1f1caed9d10dd217ba3081725b91
Justification	By entering your password you will be signing to say that you have witnessed the information contained in this document

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Justification	

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Justification	

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E.I. du Pont de Nemours and Company

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57 W. 4th St.

BOOK PAGE E. I. du Pont de Nemours and Company

TITLE 602-A INSPECTION OF CATHODE DATE 10-25-52

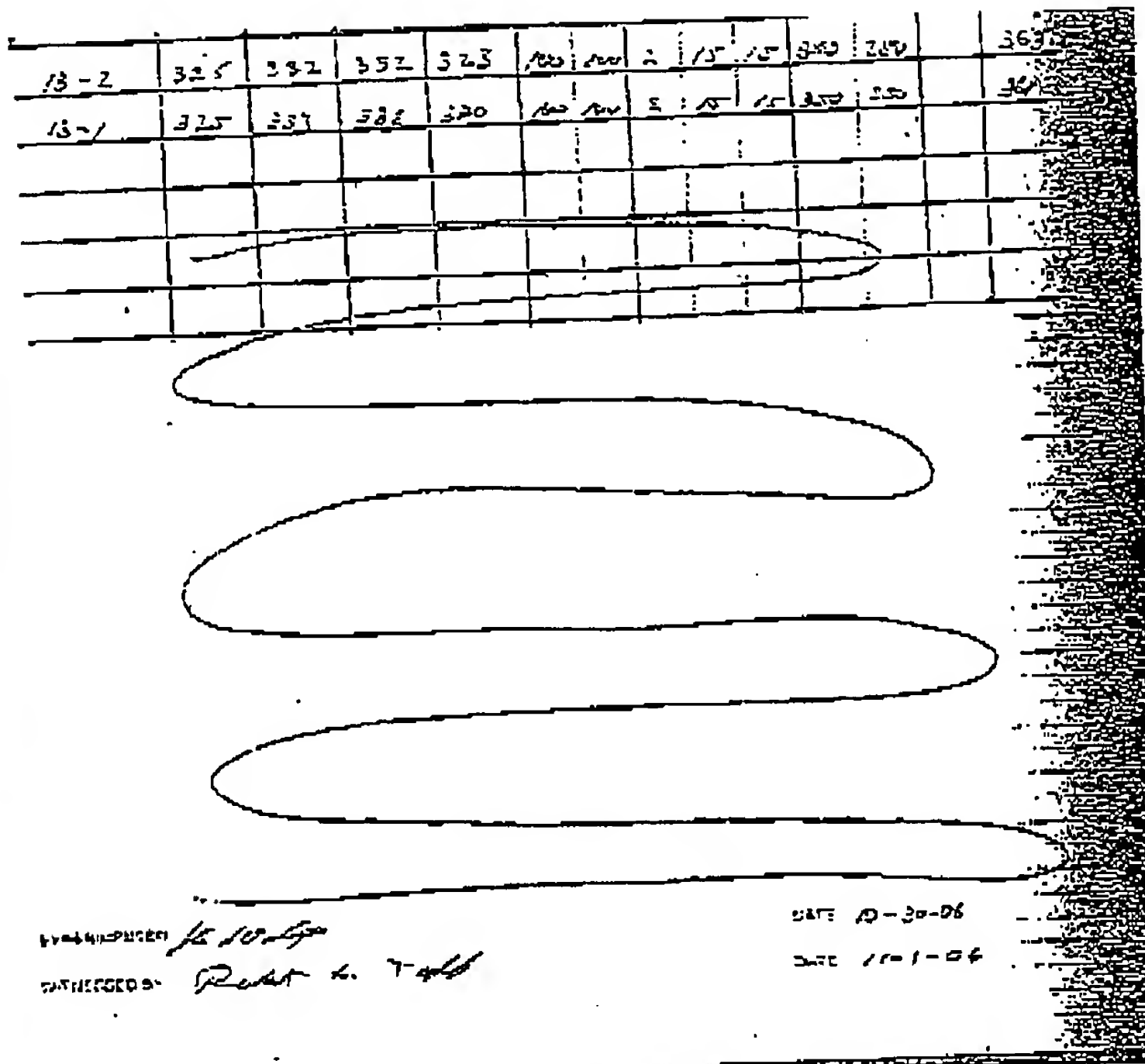
111563- 36 PURPOSE GENERAL TESTING

IR NO. 123	NE NO. 2	NO. 52	DATE 10-25-52	CYLINDER 602-A
FOR ANALYSIS			CHARGE SIZE 5.0	RAM SPEED 1000
POLYMER TYPE 50415			SCREW 6.0	SCREW SPEED 1000
MOLD 4" 12.5" (F=5)			NOZZLE 2.5"	BACK PRESS 1000

SAMPLE NO.	REAR	CENTER	FRONT	RODS	WELD		DYE			PRESS		REMARKS
					A	B	1	2	3	4	5	
12-9	325	322	322	322	100	100	2	15	15	250	100	35

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NO. 1691 P. 12



DuPont Electronic Laboratory Notebook

Identification Number : D100008 32.02

Experiment Name : D100008-18

Program Name : Zenite

Project Name: Thermal Conductivity

Document Name : ThermalConductivityofD100032-13-1apd13-2.pdf

Site Name : EYP ST

Business Unit : Engineering Polymers

Author Name : Adcock, Dave

Date : 02/26/2007 12:57:03

Co-Author Details :

Witness Name : Harvey, Pat A.

Date : 02/26/2007 13:07:04

2/26/2007 05:57:03 PM	Name: Adcock, Dave Pre-Sig Hash: 73b0cadac1bdcdf8234bdc64d81ae2e301af81ba
	By entering your password you verify that you planned and/or executed the work, directed the work, analyzed the results, or draw the conclusions described within this document.

2/26/2007 06:07:04 PM	Name: Harvey, Pat A. Pre-Sig Hash: 73b0cadac1bdcdf8234bdc64d81ae2e301af81ba
	By entering your password you will be signing to say that you have witnessed the information contained in this document.

	Name:
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	Pre-Sig Hash:

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NO. 1691 P. 13

TEST DESCRIPTION

212-852-13-1

Reaction sealed also

SAMPLE ID : 13-1

SAMPLE THICKNESS: 3.030mm

Average sample temperature = 50.3 C Controller = 30 C

TH (C)	TC (C)	TL (C)	TH (C)	TL (C)	Q	RATIO
50.0	48.2	40.2	50.0	19.64	8472.1	0.23266
50.6	48.0	40.8	29.5	19.75	10096.7	0.198887
50.6	48.1	40.9	29.5	19.73	10107.1	0.198166

Average sample temperature = 75 C Controller = 35 C

TH (C)	TC (C)	TL (C)	TH (C)	TL (C)	Q	RATIO
78.1	65.9	53.4	49.2	19.74	8354.4	0.233231
85.2	72.0	65.6	54.7	19.88	10161.7	0.198207
85.2	72.0	65.6	54.7	19.62	10167.3	0.198013

USING CALIBRATION FILE: BSLO4200.m

USING FIRST ORDER FIT

USING TEST FILE : 13-1.txt

SAMPLE ID : 13-1
 SAMPLE THICKNESS : 3.030mm
 CTE : 0.0005/0.00

THE SAMPLE HAS A THERMAL CONDUCTIVITY OF: $3.651347e-001$ W/mK
 AND A THERMAL RESISTANCE OF: $2.738208e-003$ m²/W
 AT A TEMPERATURE OF: 50.3 C

0.365 W/mK

THE DELTA T THROUGH THE SAMPLE IS : 19.73 C
 THE HEATER TEMPERATURE IS : 29.54 C
 THE DELTA T ACROSS THE STACK IS : 51.10 C
 THE GUARD TEMPERATURE IS : 45.10 C

THE SAMPLE HAS A THERMAL CONDUCTIVITY OF: $3.702624e-001$ W/mK
 AND A THERMAL RESISTANCE OF: $2.700385e-003$ m²/W
 AT A TEMPERATURE OF: 75.40 C

0.370 W/mK

THE DELTA T THROUGH THE SAMPLE IS : 19.62 C
 THE HEATER TEMPERATURE IS : 54.66 C
 THE DELTA T ACROSS THE STACK IS : 30.55 C
 THE GUARD TEMPERATURE IS : 72.02 C



DuPont Electronic Laboratory Notebook

RECEIVED
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Identification Number : D100052-28.01

Experiment Name : D100052-13

Program Name : Zenite

Project Name: Thermoelectricity for Joel Citron

Document Name : D100052-13 series Thermal Conductive Zenite Joel Citron.pdf

Site Name : SEP ST

Business Unit : Engineering Polymers

Author Name : Mike J. Molitor

Date : 02/26/2007 14:59:57

Co-Author Details :

Witness Name : Adcock, Dave		Date : 02/26/2007 15:03:04
Date (GMT)	Signed by	
2/26/2007 07:33:57 PM	Name: Mike J. Molitor	
	Pre-Sig Hash: 9b9c723fadbb2ec913753ba9ae4ebcd15c4f0fa1	
Justification	By entering your password you verify that you planned and/or executed the work, directed the work, analyzed the result, or drew the conclusions described within this document.	
2/26/2007 08:03:05 PM	Name: Adcock, Dave	
	Pre-Sig Hash: 4004778257dalf1eaeed9d10dd217ba30817d5b91	
Justification	By entering your password you will be signing to say that you have witnessed the information contained in this document.	
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Justification		

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BOOK PAGE E. I. du Pont de Nemours and Company

1017 6 55 2 111563-36 DATE 10-20-57

E 111563-36 RUN NO. PHYSICAL TEST

IR NO. 473	NB NO. 2	NO. 52	DATE 10-20-57	CYLINDER 6 02
FOR 111563			CHARGE 5.2	RAM SPEED 210
POLYMER TYPE 5047E			SCREW 5.2	SCREW SPEED 210
WELD 8" 111563 (5-2)			NOZZLE 2 52	BACK PRESS 210

SAMPLE NO.	REAR	CENTER	FRONT	NOZZLE	WELD		TIME			PRESS. (PSI)	DEBT	WELD
					A	B	E	F	H			
12-1	32.5	332	332	32.8	100	100	2	15	15	210	210	500

PAGE 16/23 * RCVD AT 8/26/2008 7:44:34 AM [Eastern Daylight Time] * SVR:USPTO-EFXRF-6/6 * DNIS:2738300 * CSID:302 992 3257 * DURATION (mm-ss):03-50

AUG. 26. 2008 7:42AM

NO. 1691 P. 17



DuPont Electronic Laboratory Notebook

Identification Number : D100052-28.01

Experiment Name : D100052-13

Program Name : Zenite

Project Name:Thermoconductivity for Joel Citron

Document Name : D100052-13 series Thermal Conductive Zenite Joel Citron.pdf

Site Name : EXP ST

Business Unit :Engineering Polymer

Author Name : Mike J. Molitor

Date : 02/26/2007 14:59:57

Co-Author Details :

Witness Name : Adcock, Dave

Date : 02/26/2007 15:03:04

Date (GMT)	Signed by
2/26/2007 07:59:57 PM	Name: Mike J. Molitor
	Pre-Sig Hash: 9b9c723fedbb8ac913753be9ac4abc413c4fdfa1
Justification	By entering your password you verify that you planned and/or executed the work, directed the work, analyzed the result, or drew the conclusions described within this document.

2/26/2007 08:03:05 PM	Name: Adcock, Dave
	Pre-Sig Hash: 40047782678a1f15aed9d10dd217ba3081785b51
Justification	By entering your password you will be signing to say that you have witnessed the information contained in this document

	Name:
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Justification	

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Justification	

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NO. 1691 P. 18

Sample # D100052	13-1	13-2
Zenite 6000	55	
Jetfil Tak 575C	37	
Carbon fiber Sigrasil	8	

212

Lee

E. I. du Pont de Nemours and Company

Form 100-36

DATE 10/1/06

RESEARCHER R. J. R. R. R.

DATE 10/1/06

TECHNICAL ASSISTANT R. J. R. R.

DATE 10/1/06

ADAPTED BY R. J. R. R.

DATE 10/1/06

INTERLOCKS CHECKED

FLUX START/STOP/COMPLETED

AUTOMATIC EQUIPMENT USED

DATE 10/1/06

TIME

TIME	EST	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL	ACTUAL
1	300	312	303						
2	300	309	301						
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BOOK PAGE E. I. du Pont de Nemours and Company

Form 100-36

DATE 10/1/06

RESEARCHER R. J. R. R.

DATE 10/1/06

TECHNICAL ASSISTANT R. J. R. R.

DATE 10/1/06

ADAPTED BY R. J. R. R.

DATE 10/1/06

INTERLOCKS CHECKED

FLUX START/STOP/COMPLETED

AUTOMATIC EQUIPMENT USED

DATE 10/1/06

TIME

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PAGE 19/23 * RCVD AT 8/26/2008 7:44:34 AM [Eastern Daylight Time] * SVR:USPTO-EFXRF-6/6 * DNIS:2738300 * CSID:302 992 3257 * DURATION (mm-ss):03-50



DuPont Electronic Laboratory Notebook

Identification Number : 32-00000 32.04

Experiment Name : D100008-18

Program Name : Zenite

தமிழகம் : திரைத் துறையில்

Document Name : ThermalConductivityofD100952-13-1end13-2.pdf

Site Name : 24P ST

Perleone Mark : Dagkonnung Nijman

Author Name : Adcock, Dave

Date : 02/26/2007 12:57:03


Co-Author Details :


Witness Exam : JERRY, Joe A.

Data : 02/26/2007 13:07:04

2/26/2007 05:57:03 PM Name: Adirack, Dave File-Only Name: D:\2006\04\15\000104540\050010000000\13702	
By entering your password you verify that you planned and/or executed the work, directed the work, analyzed the results, or drew the conclusions described within this document.	

2/25/2007 05:07:04 PM	Name: Harvey, Pat A.
	Pre-Sig Hash: 72b0cadac1b3cd68234bdc64d81ae2e301a561ba
	By entering your password you will be signing to say that you have witnessed the information contained in this document

	Name:
	Pre-Sig Hash:
	

	Name:
	Pre-Sig Hash:
	

	NAME:
	Pre-Sig Bath:

	Sum:
	Pre-Big Bash:
11/11/11	

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NO. 1691 P. 21

TEST DESCRIPTION

310052-13-1

Injection molded disc

SAMPLE ID: 13-1

SAMPLE THICKNESS: 3.030mm

Average sample temperature = 50 C Controller = 30 C

TU (C)	TG (C)	TL (C)	TH (C)	TH-TL (C)	Q	RATIO
50.0	48.2	40.4	30.6	19.64	8472.1	0.211266
50.6	48.0	40.3	29.5	19.75	10096.7	0.195857
50.8	48.1	40.9	29.5	19.78	10107.1	0.193166

Average sample temperature = 75 C Controller = 55 C

TU (C)	TG (C)	TL (C)	TH (C)	TH-TL (C)	Q	RATIO
75.1	65.9	53.4	49.3	19.74	6654.4	0.233231
85.2	72.0	55.6	54.7	19.83	10161.7	0.193207
85.2	72.0	55.6	54.7	19.62	10167.3	0.193013

USING CALIBRATION FILE: BSL04200.cas
USING TEST FILE: 13-1.tst

USING FIRST ORDER FIT

SAMPLE ID: 13-1
SAMPLE THICKNESS: 3.030mm
CTE: 0.0002000

THE SAMPLE HAS A THERMAL CONDUCTIVITY OF: $3.651347e-001$ W/mK
AND A THERMAL RESISTANCE OF: $8.205208e-003$ m²K/W
AT A TEMPERATURE OF: 50.75 C

0.365 W/mK

THE DELTA T THROUGH THE SAMPLE IS: 19.75 C
THE HEATER TEMPERATURE IS: 29.54 C
THE DELTA T ACROSS THE STACK IS: 31.10 C
THE GUARD TEMPERATURE IS: 28.10 C

THE SAMPLE HAS A THERMAL CONDUCTIVITY OF: $3.702624e-001$ W/mK
AND A THERMAL RESISTANCE OF: $8.183385e-003$ m²K/W
AT A TEMPERATURE OF: 75.40 C

0.370 W/mK

THE DELTA T THROUGH THE SAMPLE IS: 19.62 C
THE HEATER TEMPERATURE IS: 54.68 C
THE DELTA T ACROSS THE STACK IS: 35.58 C
THE GUARD TEMPERATURE IS: 72.02 C

TEST DESCRIPTION

13-1

Injection: heated, dry

SAMPLE ID: 13-1
SAMPLE THICKNESS: 0.030mm

Average sample temperature = 50.0 C Controller = 30.0 C

TU (C)	TG (C)	TL (C)	TH (C)	TU-TL (C)	Q	RATIO
50.0	48.2	40.4	80.0	19.64	9472.1	0.23266
50.8	48.0	40.8	79.5	19.75	10086.7	0.195657
50.6	48.1	40.9	79.5	19.78	10107.2	0.195166

Average sample temperature = 75.0 C Controller = 35.0 C

TU (C)	TG (C)	TL (C)	TH (C)	TU-TL (C)	Q	RATIO
75.1	65.9	58.4	49.1	19.74	8854.3	0.233231
85.2	72.0	65.6	54.7	19.83	10151.7	0.193207
83.2	72.0	65.6	54.7	19.82	10167.3	0.193023

USING CALIBRATION FILE: ESI04200.m
USING TEST FILE: 13-1.tst

USING FIRST ORDER FIT

SAMPLE ID: 13-1
SAMPLE THICKNESS: 0.030mm
CITE: 0.0001000THE SAMPLE HAS A THERMAL CONDUCTIVITY OF: $3.851947e-001$ W/mK
AND A THERMAL RESISTANCE OF: $2.598208e-003$ m²K/W
AT A TEMPERATURE OF: 50.78 CTHE DELTA T THROUGH THE SAMPLE IS: 19.78 C
THE HEATER TEMPERATURE IS: 80.0 C
THE DELTA T ACROSS THE SPACE IS: 20.54 C
THE GUARD TEMPERATURE IS: 40.4 CTHE SAMPLE HAS A THERMAL CONDUCTIVITY OF: $3.702624e-001$ W/mK
AND A THERMAL RESISTANCE OF: $2.700323e-003$ m²K/W
AT A TEMPERATURE OF: 75.40 CTHE DELTA T THROUGH THE SAMPLE IS: 19.82 C
THE HEATER TEMPERATURE IS: 85.2 C
THE DELTA T ACROSS THE SPACE IS: 21.10 C
THE GUARD TEMPERATURE IS: 65.6 C

TEST REPORT

20080824-1

Injection molded disc

SAMPLE ID: 13-1
 SAMPLE THICKNESS: 3.030mm

Average sample temperature = 58.0 C Controller = 30.0 C

TU (C)	TD (C)	TL (C)	TH (C)	TD TL (C)	Q	RATIO
50.0	48.2	49.4	50.3	19.64	9472.1	0.21266
60.8	58.0	40.8	28.3	19.75	10096.7	0.195657
60.6	48.1	40.9	23.1	19.73	10167.1	0.195166

Average sample temperature = 75.0 C Controller = 55.0 C

TU (C)	TD (C)	TL (C)	TH (C)	TD TL (C)	Q	RATIO
78.1	65.9	52.4	49.3	18.74	8854.4	0.233231
85.2	72.0	85.6	54.7	18.63	10381.7	0.193207
85.2	72.0	65.6	54.7	19.62	10167.3	0.199013

USING CALIBRATION FILE: EST-04200.CAL USING FIRST ORDER FIT
 USING TEST FILE: 13-1.LSC

SAMPLE ID: 13-1
 SAMPLE THICKNESS: 3.030mm
 CTE: 0.00021000

THE SAMPLE HAS A THERMAL CONDUCTIVITY OF $2.651347e-001$ W/MK
 AND A THERMAL RESISTANCE OF $3.773303e-003$ M²/W
 AT A TEMPERATURE OF 58.0 C

THE DELTA T THROUGH THE SAMPLE IS 19.73 C
 THE HEATER TEMPERATURE IS 50.3 C
 THE DELTA T ACROSS THE STACK IS 28.3 C
 THE GUARD TEMPERATURE IS 23.1 C

THE SAMPLE HAS A THERMAL CONDUCTIVITY OF $3.102624e-001$ W/MK
 AND A THERMAL RESISTANCE OF $3.223822e-003$ M²/W
 AT A TEMPERATURE OF 75.0 C

THE DELTA T THROUGH THE SAMPLE IS 18.63 C
 THE HEATER TEMPERATURE IS 54.7 C
 THE DELTA T ACROSS THE STACK IS 85.6 C
 THE GUARD TEMPERATURE IS 72.0 C